

# SPANAWAY

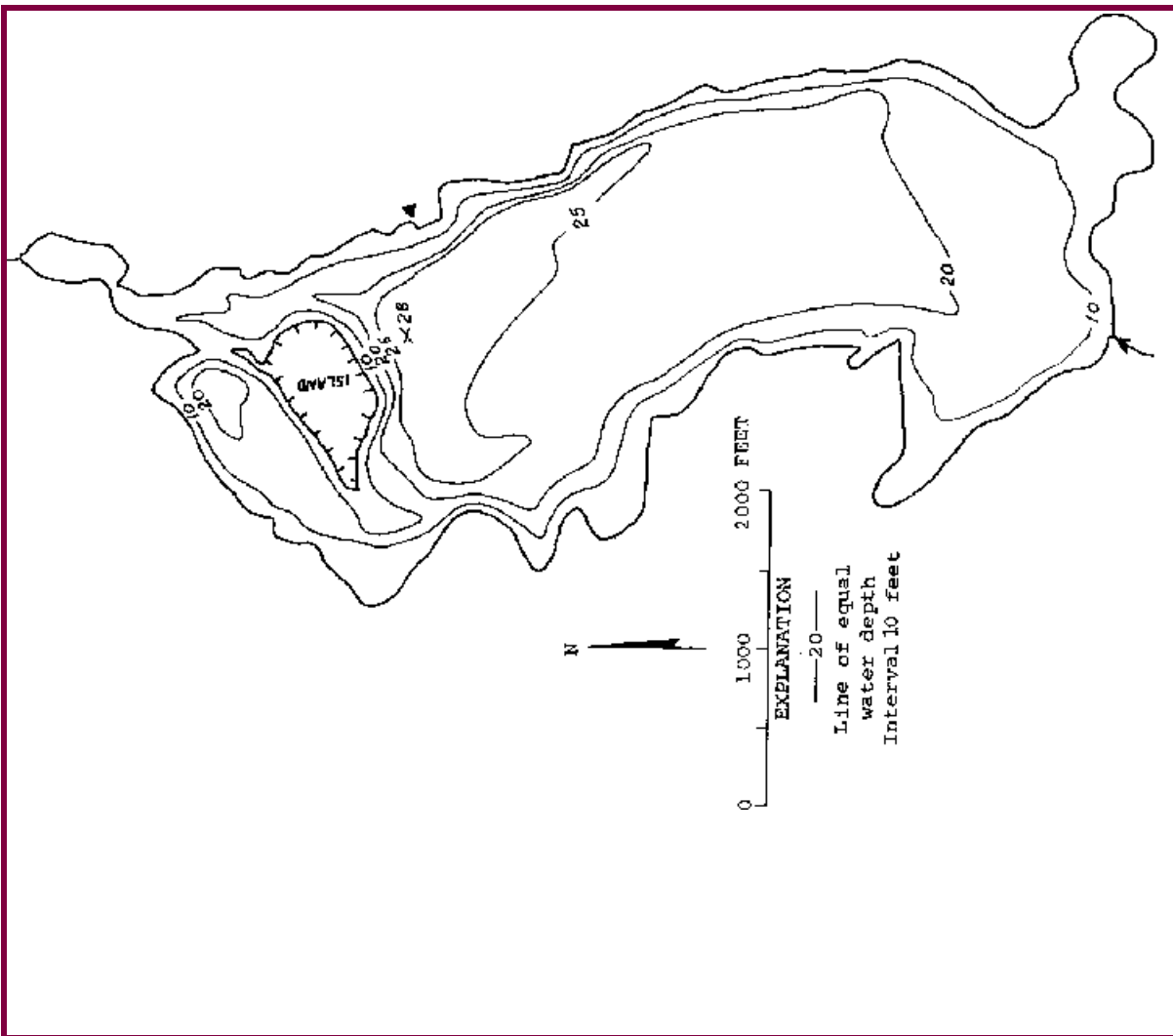
PIERCE County

Lake ID: SPAP11

Ecoregion: 2

Lake Spanaway is located ten miles south of Tacoma, and 0.5 mile west of Spanaway. It is fed by drainage from a swampy area, and drains via Spanaway Creek to Clover Creek and Lake Steilacoom. Daron Island lies in the north portion of the lake

<i>Area (acres)</i>	<i>Maximum Depth (ft)</i>	<i>Mean Depth (ft)</i>	<i>Drainage (sq mi)</i>	
280	28	16	17	
<i>Volume (ac-ft)</i>	<i>Shoreline (miles)</i>	<i>Altitude (ft abv msl)</i>	<i>Latitude</i>	<i>Longitude</i>
4600	4.36	320	47 07 11.	122 26 45.



## Station Information

SPAPII

Primary Station	Station # 1	latitude: 47 06 47.0	longitude: 122 27 01.7
	Description:	In deep part of lake, due west of public boat launch and south of eastern shore of island	
Secondary Station	Station # 2	latitude: 47 06 24.4	longitude: 122 26 58.7
	Description:	Across from boat launch, approximately 500 feet east of west shore at point directly across from boat launch	
Secondary Station	Station # 3	latitude:	longitude:
	Description:	In horizontal middle of lake near south end, directly south of boat launch and directly east of a small cove just north of southern portion of lake; no coordinates recorded	

## Trophic State Assessment for 1998

SPANAWAY

Analyst: KIRK SMITH

TSI_Secchi:	44
TSI_Phos:	48
TSI_Chlor:	54
Narrative TSI: <sup>a</sup>	ME

Spanaway Lake is an urban lake bordered by a large city park along its northeast shore. The lake has suffered numerous blue-green algal blooms in recent history and shows a tendency to go anoxic in the hypolimnion during the summer, resulting in periodic internal nutrient release and very high hypolimnetic phosphorus concentrations. Records show that the lake was once dredged, which may have provided for many years of artificially clear water. Spanaway Lake is fed by a stream originating from a wetland. The wetland, park, and golf course are potential sources of nutrients to the lake. Natural shoreline is altered in the park and fertilizer runoff from the golf course may contribute to the eutrophication--although most of the runoff likely enters near the outlet of the lake. The user survey suggests the water clarity is deteriorating through the years with only one respondent out of 11 believing the clarity has improved. Detractors to the use of the lake, according to survey respondents, include the poor water clarity and the abundant Canada geese. All respondents said they'd rather have clearer water than fewer aquatic plants. A significant Aphanizomenon bloom was observed in August.

Although the lake has been productive for largemouth bass fishing in recent history, it's questionable whether the extensive anoxia in the summertime hypolimnion is conducive to a good trout fishery. Having both a good trout and bass fishery is important to the residents who responded to the survey. Water clarity may impair primary contact recreation at times but the overall Secchi TSI suggests more mesotrophic conditions. We assigned an overall assessment of meso-eutrophic. The habitat survey revealed significant human influence (lawns, buildings and docks) on the habitat of the lake. There was also a high population of geese on the lake to take advantage of all the human influences conveniently provided.

<sup>a</sup> E=eutrophic, ME=mesoeutrophic, M=mesotrophic, OM=oligomesotrophic, O=oligotrophic

## SPANAWAY

Strata: L=lake surface, E=epilimnion, H=hypolimnion; Qualifier: J=Estimate, U=Less than

## SPANAWAY

**Observations (check mark denotes presence)**

BMP's ☐

Natural vegetation lacking along shoreline.

Odors ☐

Cattle ☐ Ducks ☐ Geese ☐

Fertilizers and weed killers appear to be used in residential or agriculture area ☒

Yes, manicured lawns and a public golf course.

Buffer zones around streams and wetlands ☒

Irrigation ☐

Survey Id: 30

## Habitat Survey Summary Report

SPANAWAY

Data are averages of 10 Stations Surveyed

Date of Visit: 8/19/1998

### Vegetation Type (Avg. only of sites w/ vegetation present; 1=coniferous, 3=deciduous)

Canopy Layer Avg:	1.6	Number of stations with canopy:	10
Understory Avg:	2.7	Number of stations with understory:	10

### Percent Areal Coverage (0 = absent, 1 = <10%, 2 = 10-40%, 3 = 40-75%, 4 = >75%)

Canopy Layer:	trees > 0.3 m DBH	1.5
	trees < 0.3 m DBH	0.6
Understory:	woody shrubs saplings	2.2
	tall herbs, forbs grasses	1.5
Ground Cover:	woody shrubs seedlings	2.1
	herbs, forbs, grasses	2.7
	standing water or inundated veg	0.9
	barren or buildings	1.3
Substrate Type (within shoreline plot):	bedrock	0.0
	boulders	0.1
	cobble/gravel	1.8
	loose sand	0.7
	other fine soil/sediment	0.6
	vegetated	2.5
	other	0.8
Bank Features:	angle (0:<30; 1: 30-75; 2:nr vertical)	0.5
	vertical dist (M from wtrln to high wt):	0.2

horiz. dist. (M from wtrln to high wt): 0.5

**Human Influence (0 = absent, 1 = adjacent to or behind plot, 2 = present within plot)**

buildings	1.0
commercial	0.0
park facilities	0.4
docks/boats	1.2
walls, dikes, or revetments	0.9
litter, trash dump, or landfill	0.2
roads or railroad	0.0
row crops	0.0
pasture or hayfield	0.0
orchard	0.0
lawn	1.4
other	0.2

**Physical Habitat Characteristics**

station depth (at 10 m from shore) 1.8

**Bottom Substrate (0 = absent, 1 = <10%, 2 = 10-40%, 3 = 40-75%, 4 = >75%)**

bedrock	0.0
boulders	0.1
cobble	1.6
gravel	1.9
sand	1.2
silt	1.2
woody debris	0.3

**Macrophyte Areal Coverage (0 = absent, 1 = <10%, 2 = 10-40%, 3 = 40-75%, 4 = >75%)**

submergent	0.5
emergent	1.2
floating	0.3
total weed cover	1.1

Do macrophytes extend lakeward (-1 = yes, 0 = no) -0.3

**Fish Cover (0 = absent, 1 = Present but sparse, 2 = moderate to heavy)**

aquatic weeds	0.8
snags	0.0
brush or woody debris	0.9
inundated live trees	0.1
overhanging vegetation	2.0
rock ledges or sharp dropoffs	0.0
boulders	0.0
human structures	1.2

## Questionnaire

SPANAWAY

Results compiled from 11 Surveys. Average time (years) respondents spent on lake: 10.20

### Did the following add (+1), detract (-1), or have no effect (0) on your enjoyment of the lake today?

Types of WaterCraft:	-0.5	View:	0.7	Distance to Lake:	0.5
Public Access:	-0.3	Swim Beach:	-0.5	Canada Geese:	-0.9
Water Clarity:	-0.7	Water Qual. for Swim:	-0.6		
Fishing Quality:	0.0	Aquatic Plants:	-0.3		

On a scale of 1 (poor) to 5 (excellent), how would you rate water quality today? 2.0

### Which would you rather have, 1 or 2?

1) Better fishing and more natural habitat, or 2) clearer water?	1.6
1) Better fishing and more natural habitat, or 2) fewer aquatic plants?	1.5
1) Clearer water, or 2) fewer aquatic plants?	1.0

### How important is each of the following characteristics to you (1 = very undesirable, 5= very desirable):

Restricted Watercraft:	3.6	Good Warmwtr Fishing:	4.4	Natural Scenery:	4.4
Plant Growth:	2.3	Good Swimming:	4.1	Public Beach:	2.2
Natural Shoreline:	3.5	Less Algae:	4.2	Canada Geese:	1.6
No Odors:	4.3	Public Access:	2.5		
Good Coldwtr Fishing:	4.4	Clear Water:	4.1		

### Tabulated Results

Survey ID	Date	-----Residency-----		Rent or Own	Primary Activity*	-----Water Clarity-----		
						Purchase Factor?	Has it Changed?	When?
53	7/22/1998	Resident	Permanent	Rent	10	<input checked="" type="checkbox"/>	Worse	1991
54	7/25/1998	Resident	Permanent	Rent	8	<input checked="" type="checkbox"/>	Worse	1989-1990
55	8/10/1998	Resident	Permanent	Rent	10	<input type="checkbox"/>	Worse	1994
56	8/16/1998	Resident	Permanent	Rent	8	<input checked="" type="checkbox"/>	Worse	1996
57	8/25/1998	Resident	Permanent	Rent	3	<input checked="" type="checkbox"/>	Worse	1997
58	7/29/1998	Resident	Permanent	Rent	1	<input checked="" type="checkbox"/>	Worse	
69	8/24/1998	Resident	Permanent	Rent	7	<input type="checkbox"/>	No	
73	8/31/1998	Resident	Permanent	Rent	several of the above	<input type="checkbox"/>	No	
75	12/31/1998	Resident		Rent		<input type="checkbox"/>	Unknown	
76	8/29/1998	Visitor			2	<input type="checkbox"/>	Better	1993
83	8/19/1998	Visitor			10	<input type="checkbox"/>	Unknown	

\* 1=canoe/kayak, 2=fish, 3=pers. wtrcraft, 4=mtrboat, 5=sail, 6=swim/wade, 7=watch wldlf, 8=ski, 9=windsurf, 10=relaxing

## Zooplankton Report

SPAPI1

Date 6/12/1998 Station: 1 Too few to count  
Sample ID 14

Number of organisms measured: 14

Group	Percent
Cladoceran	21.4%
Copepod	78.6%
Other	

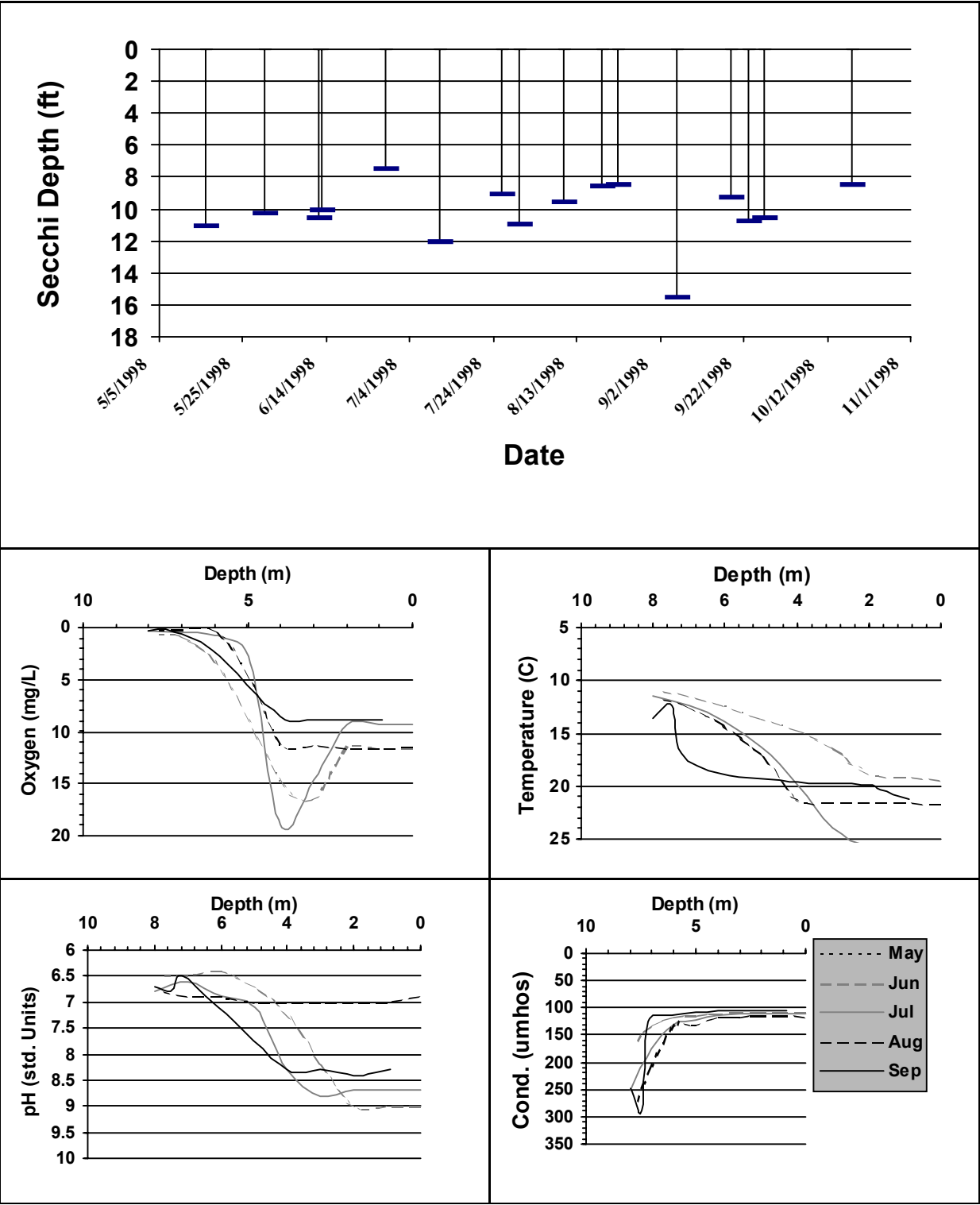
Group	Percent
Small < 1mm	85.7%
Large >= 1mm	14.3%
Ratio of large to Small:	0.17
Average size (mm):	0.51

---

Secchi Depth and Profile Graphics

Station: 1

SPAPI1





## Secchi Data and Field Observations

SPANAWAY

Date	Time	Temp- erature (F)	Secchi (ft)	Color (1-greens, 11-browns)	Bright- ness (pct)	Wind (1-none, 5-gusty)	Rainfall (0-none, 5-heavy)	Aesthetics (1-bad, 5- good)	Swimming (1-poor, 5- good)	Geese (#)	Waterfowl (besides geese #)	Boats- Fishing (#)	Boats- Skiing (#)
Station 1													
5/16/1998		13.3	11	6	100	4	4	4	4	5	6	1	0
	Sampler: THOMPSON			Remarks:									
5/30/1998		15.6	10.25	6	100	2	2	3	3	8	6	6	1
	Sampler: THOMPSON			Remarks:									
6/12/1998		18.8889	10.5	6	30			3	3	0	0	0	0
	Sampler: SMITH			Remarks: H2S ODOR AT 7 METERS. TWO ZOO TOWS AT SITE #3. The Oxygen result is qualified as an estimate due to postcalibration failing QA/QC requirements.									
6/13/1998		18.9	10	6	100	2	1	3	3	20	6	5	2
	Sampler: THOMPSON			Remarks:									
6/28/1998		19.4	7.5	6	0	3	1	3	3	12	6	0	4
	Sampler: THOMPSON			Remarks: ALOT OF ALGAE.									
7/11/1998		20.6	12	6	75	2	3	3	3	26	2	12	1
	Sampler: THOMPSON			Remarks: JULY 17TH - WARNING POSTED AT COUNTY PARK ON LAKE - "HIGH LEVELS OF FECAL COLIFORM; SWIM AT OWN RISK".									
7/26/1998		25.6	9	6	0	2	1	1	1	28	0	2	23
	Sampler: THOMPSON			Remarks: LAKE STILL CLOSED TO SWIMMERS DUE TO HIGH LEVELS OF FECAL COLIFORM. LAKE HAS BEEN CLOSED SINCE JULY 17, 1998.									
7/30/1998			10.89	6	100	2		1	1	74	110	0	0
	Sampler: SMITH			Remarks: FECS IN THE WATER, CLOSED FOR SWIMMING. PARK ATTENDENT SAID THERE MAY HAVE BEEN ILLEGAL HERB APPLICATIONS ON ISLAND									
8/10/1998		24.4	9.5	6	0	2	1	1	1	25	8	5	5
	Sampler: THOMPSON			Remarks: LAKE STILL OFFICIALLY CLOSED BY TACOMA HEALTH DEPT. DUE TO HIGH LEVELS OF FECAL COLIFORM. LAKE HAS BEEN CLOSED SINCE JULY 17, 1998.									
8/19/1998			8.58	3	0			3	3	0	0	0	0
	Sampler: SMITH			Remarks: 2 OSPREY FLYING TOGETHER. EXTREMELY STRONG H2S ODOR FROM 7.5M SAMPLE. ABUNDANT APHANIZOMENON BLOOM, SAMPLE TAKEN. NO BOATS OR WATERFOWL COUNTED.									

Date	Time	Temp- erature (F)	Secchi (ft)	Color (1-greens, 11-browns)	Bright- ness (pct)	Wind (1-none, 5-gusty)	Rainfall (0-none, 5-heavy)	Aesthetics (1-bad, 5- good)	Swimming (1-poor, 5- good)	Geese (#)	Waterfowl (besides geese #)	Boats- Fishing (#)	Boats- Skiing (#)
8/23/1998		21.1	8.5	6	25	2	1	1	1	44	8	5	1
	Sampler: THOMPSON			Remarks: LAKE STILL CLOSED PER HEALTH DEPT. DUE TO FECAL COLIFORM.									
9/6/1998		22.2	15.5	6	0	1	1	3	3	24	6	3	7
	Sampler: THOMPSON			Remarks: HEALTH DEPT. REOPENED SPANAWAY LAKE ON 9/14/98. GREAT CLARITY TODAY BUT MORE WEEDS THAN I'VE SEEN IN TEN YEARS.									
9/19/1998		20	9.25	6	25	1	4	3	3	16	6	3	3
	Sampler: THOMPSON			Remarks: LAKE REOPENED 9/4/98.									
9/23/1998			10.73	3	0			4	3	30	260	2	0
	Sampler: SMITH			Remarks: BALD EAGLE SPOTTED. FEC#1 AT PLATFORM ON SOUTH END; FEC#2 AT PLATFORM AT SWIM BEACH. STRONG H2S IN HYPO.									
9/27/1998		16.7	10.5	6	100	2	5	3	3	8	8	5	0
	Sampler: THOMPSON			Remarks:									
10/18/1998		14.4	8.5	8	50	1	3	1	1	6	400	7	1
	Sampler: THOMPSON			Remarks: BLUE-GREEN ALGAE MODERATE ALONG SHORE. LAKE WATER HAS TURNED BROWN! HUNDREDS(400+) OF ROOTS ON THE LAKE.									